8. Pavement Drainage Design

Avoid premature pavement failures by providing proper drainage. Refer to the *Alaska Preconstruction Manual,* Chapter 11, Section 1120.4, Drainage, for basic guidelines. DOT&PF's *Highway Drainage Manual* is also available via Internet at http://www.dot.state.ak.us/stwddes/dcspubs/manuals.html. Pavement designs must provide for surface and subsurface drainage of moisture away from the pavement surface and supporting layers.

For driver safety, the less water on the road surface the better. The pavement design engineer must be able to identify any points on the pavement where standing water or sheet flow is sufficient to cause hydroplaning and skidding. Provide strategies for eliminating standing water and minimizing the film thickness of moving water on the pavement surface. Typical strategies include increasing cross slope, adding drainage inlets, adding culverts, increasing ditch depth, or grooving the pavement. Paved shoulders help move water away from the pavement structure.

For structural reasons, the less water in the pavement structure the better. Drainage ditches must be large enough to store the annual snow accumulation as well as move the water away when the snow melts. Ditches must keep water moving away from the pavement structure during rainstorms. This requires careful attention to ditch grades and cross drainage, especially in areas of sag curves.

General references concerning drainage design are available through federal government publications *Pavement Subsurface Design Manual,* NHI Course No. 13126, and *Pavement Subsurface Drainage Systems,* Transportation Research Board, NCHRP Report No. 239, 1997.